

Published for the British Amateur Television Club at Cheyne Cottage, Dukeswood Drive, Gerrards Cross Bucks.
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Editors Note

Dear OMs,

Now that the TV licences are on their way, some of you have enquired about the future of the BATC, and in particular what will happen to CQ-TV. New members may like to know that the Club was originally formed for the specific purpose of getting the TV licences issued, and that this magazine came as an afterthought. For the moment, I intend to let the magazine die a natural death as soon as stocks of paper, covers, etc, run out. This means about another five or six issues only, finishing up in about mid-1952. By that time, one or other of the commercial Radio mags may find space for a page of TV transmitting topics. In that case, your editor, printer, publisher, and sticker-on-of-stamps will invite himself to have a pint in celebration! For the time being, publishing dates will coincide with University holidays, i.e. about March 20th, June 20th, Aug-Sept, and Dec 20th.

With regard to the actual licences, these are being issued on a provisional basis, and the precise conditions are not yet known. However, the conditions are likely to be very similar to the sound tx licence. It is certain, though, that a sound licence must be held before a TV licence will be issued. One other definite ruling - sound may be transmitted simultaneously or independently, on the same or any other channel as the vision. Full details will be published as soon as they are known.

In the last issue, the idea of a TV Convention, to which all members would be invited, preferably bringing some item of TV gear in lieu of entrance fee, was mooted. Several members have expressed their approval, and some of our overseas members are hoping to come over for the occasion. It is felt that it would help members if our Convention coincided with the RSGBs four day Festival of Britain effort. It is not intended that our own session would last longer than one day, and it would be held in the London area as being most convenient. Would you let me know your opinions, and also whether you can bring some gear, or perhaps transport another member from your area, or (Londoners) if you could put up a visiting member over the weekend. Provisional date is June 23rd. We hope to have a demonstration of at least three different cameras, plus telecine gear, etc. In addition, visits to the BBC TV studios, lectures, meetings of the Licence and Standards Committees, plus plenty of time to look at the gear, meet the other chaps, and have a darned good grip! We can lay on some refreshments, invite the Press and TV Newsreel, and have a good splash. Lets have your ideas and suggestions.

Negotiations are in progress for the release of the Seventy Gm band for TV, but as there is a lot of official business to be run through, it is most unlikely that even if permission is granted, it will be possible to use the band before 1952 at the earliest. So get out that CV67, put it in the loft in a corner reflector, and get some TV on the air. Remember, 100 milliwatts in an array giving 25 dBs gain is just as good as 50 watts to a dipole - and you can't expect anything better than S9+ signals, can you?

Another good trend is the appearance of several other TV types....the TV Society have a transmitting group, and the South London RSGB group is also interested (G3FNL). Overseas we have news of LA4KA, SM5TT, VE2HE, WLBID as being active. It is hoped to publish a list of all active stations with frequencies and systems in the near future. Who is going to be first with a TV QSO in this country? To work, minions.....

"LES COURTS DE CETTE MOIS" ou quelquechose.....!

Wally Oliver says there was a fb article on camera tubes in Jan '51 Wireless Eng. He adds that any members round Morecambe way are welcome to drop in and/or attend the various outings of the Morecambe and District Radio Engineers Society.

Any member with a lathe care to do plumbing jobs for others at suitable fee?

Any member wanting a permanent job with a very famous TV firm, involving world travel, will hear something to his advantage if he contacts me. Preference given to BATC members. Will anyone with the base connections of the ACR8 and 2X please let me have them?

I can no longer get Xtal reground; sorry.

There is no news of the Vidicon being released for amateur use.

E.H.Bantherpe and Ian Wilson both explain that simple interlace generator; it seems it is merely a pulsed oscillator fed from the frame TB, and feeds 20 kc/s pulses OUT to the line TB, which divides by two on its own. The line TB is not fed into the generator. The original article is in the Aug 1950 Electronics. E.H.B adds that full circuits of 5527 camera units can be found in June 1947 Electronics.

Grant Dixon wants a VCR159A or similar, and 6SN7s - both fairly cheap!

He also wants information on Amode followers, and which is better for square wave output, a multivibrator or a flip-flop?

Pete Parkin does not recommend the pulser shown in Radio and TV News.

Maurice Swift says the 7FP7 is fb fer TV. He also wants a restatement of standards, so let's recap: Video signal capable of locking a normal BBC rx; on the RF side, most chaps are trying 13cm band with FM, positive modulation. However it must be pointed out that negative modulation has definite advantages, and we would recommend that Neg mod be used on 13 cm FM, and leave positive mod AM to the 70 cms band if and when.

QSLs - many thanks for the various comments. Most seem to be agreed that there is so much one COULD put on the d--n thing that something simple is called for, upon which we can overstick our calls. Something nice and elegant, with perhaps an RST/CSQ scale on the back. Ian Wilson points out that we shouldn't need many, and suggests photo-copying. Fred Rose suggests we all have a still picture of our own card, and that the other bloke makes two photos of it - one for himself, and one to send to you!

Eric Langton says there are a couple of useful pages on TBs in the Dec 1950 issue of Radio-Electronics....using the 884, and 6SN7 as a flip-flop.

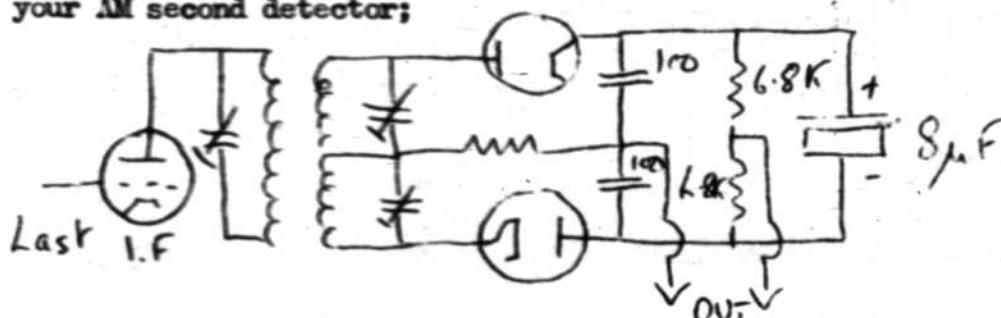
The April-June '50 Journal TV Soc has interesting articles on projection TV, and on 480 Mc/s TV relaying.

RCA have sent along a specimen copy of "Broadcast News", a fb mag primarily for professional radio engineers. This covers all aspects of sound and video broadcast practice, and may be obtained from R GIs at about £2 for 12 issues, publication approx bimonthly.

For your interest, Varley's and Aish's both have offered their services for any special transformers you fellows may be needing. Nothing said about the cost. J.V.Radio of Plymouth have some nice test gear going reasonably cheaply too. EMI often have something for the ham too, but not Iconoscopes.....

G2FXA has formally resigned from the Club since the membership list was typed.

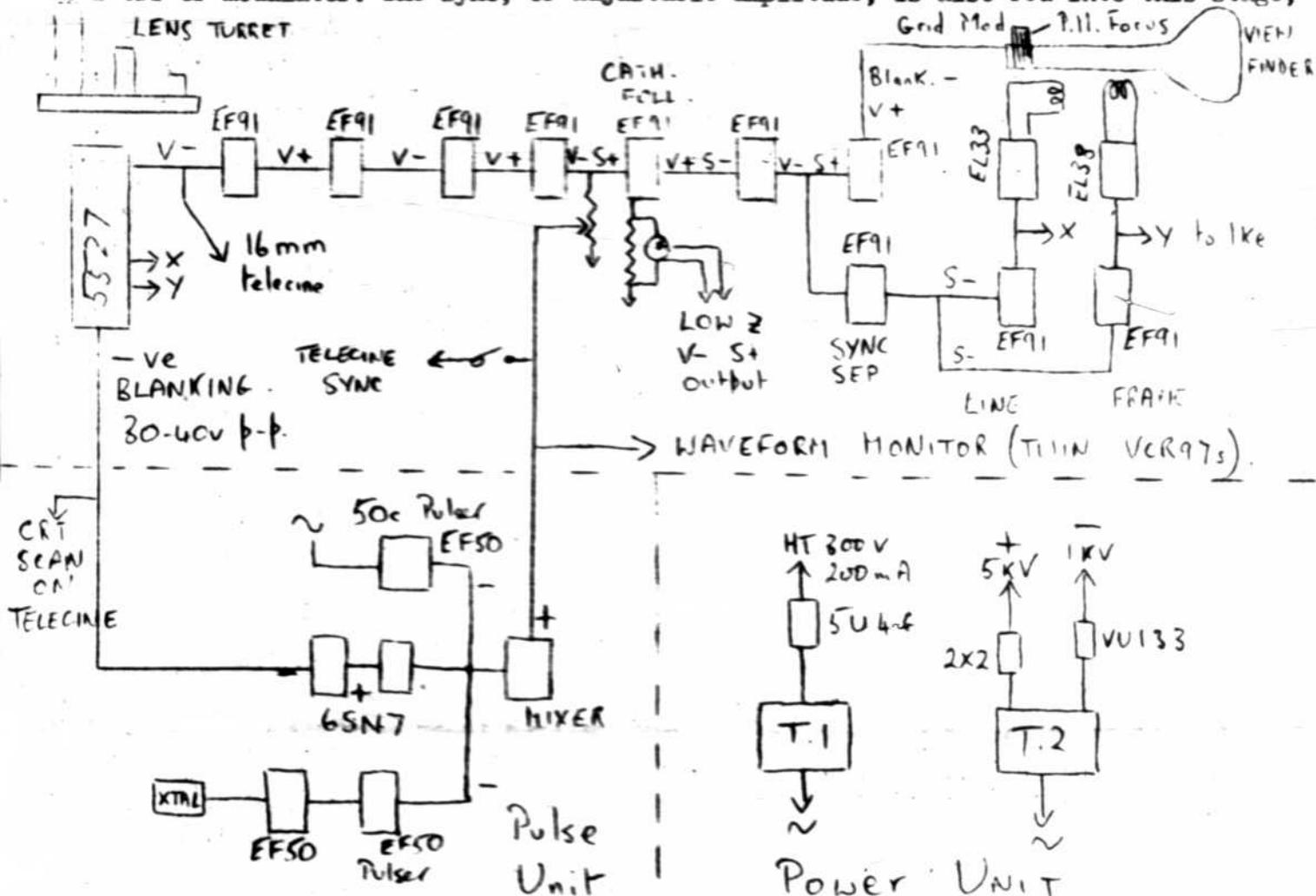
And for those of you who do not possess a 10 set rx, here is a circuit for a ratio discriminator for FM work; note that no limiter is needed, and this unit can be stuck in place of your AM second detector;



(Now that the supply position for 5527 Iconoscopes is looking up, a few notes on Ike circuits and arrangements may be of use. Here is part 1 of a series by G.G. Short, describing his own rig. In addition to a 5527 camera with lens turret, he also has a fb telecine job, and will give details in a later article).

A 5527 ICONOSCOPE CAMERA CHAIN - by G.G. Short.

The camera is shown schematically in Fig 1, together with the pulse generator and power pack units. The output from the 5527 is negative, and is fed into a 4 stage EF91 video amplifier. The fifth stage is a cathode follower feeding 80 ohm co-ax to the monitors or modulator. The sync, of adjustable amplitude, is also fed into this stage,



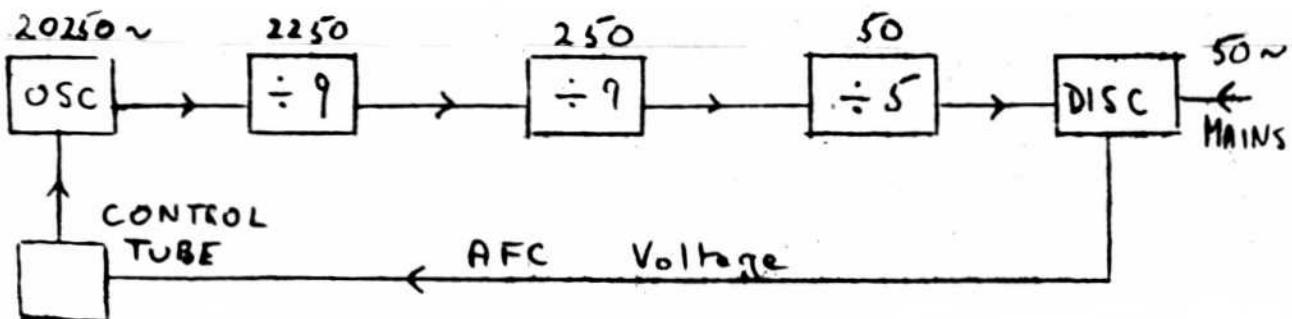
with positive polarity. The viewfinder CRT has its own 2 stage video amp, the CRT grid being driven from the anode of the second stage. A sync separator is driven from the first stage, driving its own separate time bases. Common deflection of viewfinder and 5527 is not possible, since the viewfinder is a magnetic tube. The TBs are Miller type.

The pulser unit generates 50 cps pulses of 1 millisecond duration, and 10 kc/s pulses of 20μs duration. The two negative going pulses are mixed in an additive mixer, and a 6SN7 inverter is incorporated to give negative blanking pulses for 5527 or telecine.

Two 9" magnetic monitors are in use, both similar to the viewfinder circuit; each has a 2 stage amplifier, and sync separating circuits, and incorporates its own power pack. In addition, a waveform monitor, employing two VCR97s, is in use, and will be described in later articles.

A HIGH STABILITY FREQUENCY DIVIDER FOR PULSERS by Tony Sale

(This unit can be used to lock 10125 cps oscillators to the mains for interlacing).



The block diagram shows the method of dividing down from 20250 cps to 50, and beating the resultant against 50 cycle mains. A correction voltage is developed and applied to the original 20250 cps oscillator to keep it on the correct frequency. All oscillators are phantastrons, with diodes to clean up the pulse shape after each. A phase discriminator gives an output voltage that is used to correct the first osc.

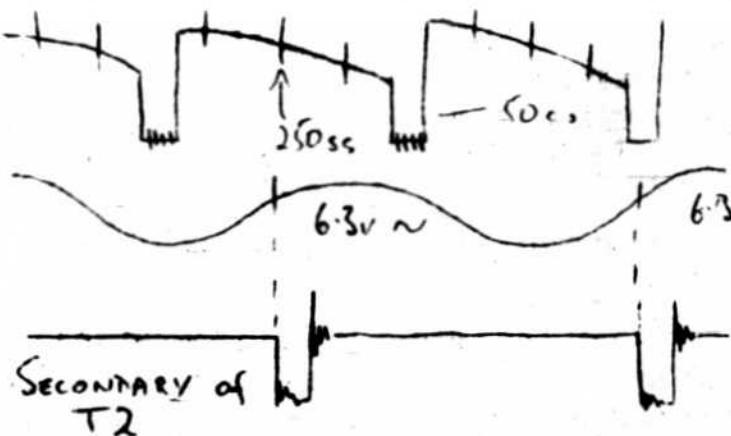
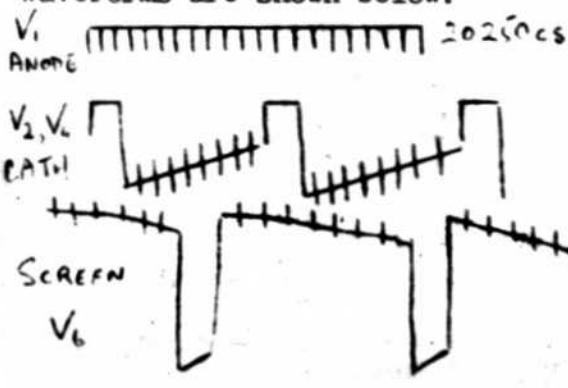
The actual circuit employs V1 as the basic 20 kc/s oscillator; frequency control is provided by the 2 Meg grid pot, with a fine adjustment in the bias of V9, the control tube. 20 kc/s output is taken to V2, whose grid is returned to a positive point about 100 v up. 150V neg pulses are taken from the screen at 1/9th of the input frequency, i.e. at 2250 cps. V3 cleans up the pulses, which are then divided by 9 again, and then by 5. These 50 cps pulses are fed via T2 (an intervalve Xformer) to the phase sensitive detector, V7 & V8. The DC output of this unit is applied to the grid of the control tube V9. The variations in current through this tube cause its anode potential to vary, and hence the grid potential of V1, thus keeping it locked to the mains.

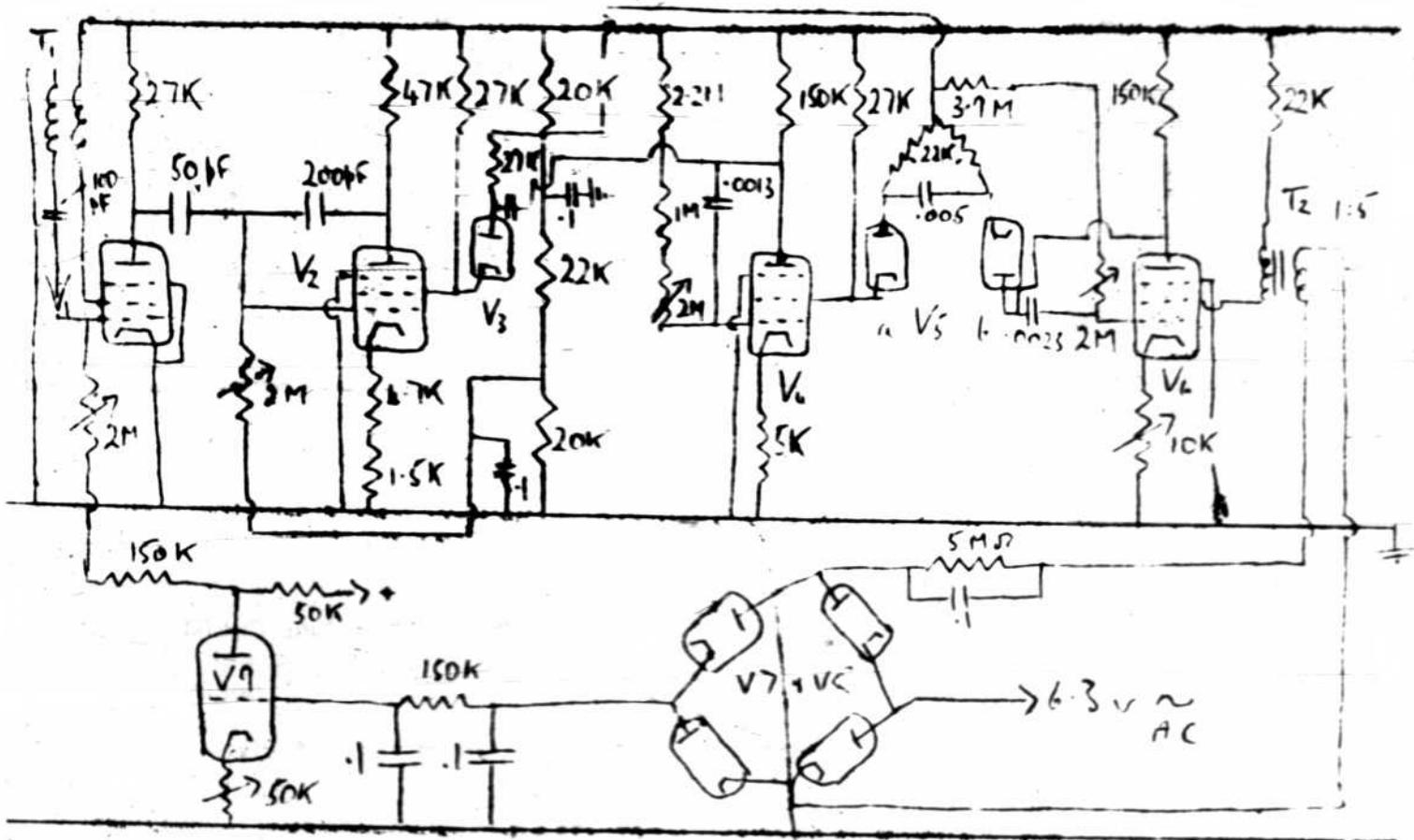
Stability Figures:

The circuit will remain locked for HT variations of 250-360 V; the first phantastron will remain locked for a 1800 cps change in osc frequency, the others easily handling their own changes. This swing is obtained from about 1.0V change in AFC voltage.

Setting up:

This is best done with a BFO and scope. The CRO is taken to the screen of V6, and the tube is set to 50 cps. V4 is adjusted until 5 pips appear on the V6 waveform. The CRO is now taken to the cathode of V4, and the AFC line is shorted. The 50K bias pot on V9 is adjusted until the anode volts on V9 are about 170V. V2 is adjusted to give 9 pips on the waveform, and then the coarse freq pot of V1 to give 9 in between those. The AFC line is unhooked, and the bias of V9 reset to give the same value of V_a. If the output voltage is nearly 50 cps, almost 30 volts of AFC voltage will be found at the anode of V9. Slight alteration of the bias will lock the whole circuit. Some waveforms are shown below.



Circuit of High Stability Frequency Divider

(Left) Details of T1: Screen winding 40t 38 swg enam.
Grid 60t 34 swg.

THE ICONOSCOPE SUPPLY SITUATION

As members are aware, an import licence is necessary for the import of RCA 5527s. In order to save time and trouble, RCA's London office applied for permission to import 20 of these tubes at once, but unfortunately their application was turned down by the Board of Trade. However, the BoT state that they will continue to grant individual licences where "documentary evidence to the effect that genuine research work is being undertaken and that alternative U.K. tubes are either not available or unsuitable (is provided)". To date, the BoT have not refused any application by an amateur, although the exact nature of the documentary proof required is in doubt, since we are amateurs and can hardly produce anything more than a certificate of membership of the club plus our own statement concerning the genuine research work being undertaken. Presumably, so long as the tubes are required for private, non-commercial experiments, this will be sufficient. Certainly there is no U.K. tube available at a comparable price of a type suited to amateur needs.

If members would like a certificate of accredited membership of this club for submission to the BoT, I shall be happy to oblige. The necessary documents of proof should be sent to RCA Photophone Ltd, 36 Woodstock Grove, London W12. RCAs will do ALL the paper-work to do with the import licence just as soon as they get your documentary evidence. The actual price is uncertain, but is likely to be around £50 or so.

Our roving reporter Hendrik de Waard P~~A~~ZX on a lightning fact-finding tour of Northern Europe - combined with his honeymoon! - sends us this up to the minute report of conditions as he found them.....

De Waard's first stop was at Stockholm, where he met the Stockholm TV gang, Bjurstrom SM5TT, Barkland and Svedborg, who had constructed a 5527 camera with all the control gear, but no RF rig due to licencing trouble. He sent some photos of the gear, and very fb it looked....racks...panels...knobs....meters. .all MATCHING!

Next stop was the official TV effort; RCA 5826 Image Orths at 625 lines; 62.25Mc/s and Channel 7 (180 Mc/s?) 1 kW transmitters, but no program of course. Plenty of USA recvs in evidence. To Denmark, where the money floweth not so freely...Plenty of enthusiasm, though, in spite of only 100 watts from an ancient Philips 62.25 Mc/s Tx, and only two studio cameras. Nevertheless, the Danes are thinking in terms of programmes.

Back home in Holland, de Waard attended the P~~A~~TV conference. Some 80 hams were there, plus Government officials and the Press. A resolution was drawn up urging the establishment of a cable or VHF link with the UK, France and Belgium, since there is not sufficient money or talent available in the Netherlands to put on sustained TV shows. TV receivers are now appearing in the shops, but @ £75 for a "Q" model; these have RF amplification, 5.5 Mc/s bandwidth, vestigial sideband system, negative mod, flywheel sync. The 600ft Tx mast is up at Lopik, about 50 km from the Hague and Rotterdam, and 25 km from Utrecht. However, no studio yet...

The new amateur rig at Hogezaand - some 15 km from Groningen - runs @ 250 watts, using QQE3/300s in p-p. This is being built by P~~A~~WZ, and feeds a vertical array of 3 colinear half waves with phasing stubs. Sound is on 29.6Mc/s from a T1131. Work continues.

MEMBERSHIP LIST This will be published in sections (to annoy you) of Licensed and non-licensed members.

Section (i) - Licensed members

Ian Macwhirter	G3ETI	16, Queens Ave, Gt. Meols, Wirral, Cheshire. (HOYlake 1412).
Ivan Howard	G2DUE	40, Regent St, Stotfold, Beds. (Stotfold 297).
M.W.S. Barlow	G3CVU	Cheyne Cottage, Dukeswood Drive, Gerrards Cross, Bucks. (2935).
Harry Wills	G2HVF	Seletar, 47 Hall Ave, Rushden, Northants.
Harold Jones	G5ZT	Bumbank, Goosewell Hill, Egguckland, Plymouth.
Don Bradford	G3G-B0	9, Oxford Gardens, Denham, Bucks. (Denham 2019).
Fred Rose	G3BLV	16, North Bridge St, Sunderland.
George Haylock	G2DHV	63, Lewisham Hill, SE13.
Ian Wilson	G5BHH	2, Springwell Ave, North End, Durham City.
I.J.P. James	G5LJ	40, Julian Rd, Ealing W5.
S.J. Davies	G2FLA	35, Kensington Rd, Stockton-on-Tees.
Jack Hargreaves	G5V0	2, Main St, Bempton, Yorks.
Jimmy Hedges	G3DBV	22, Worsley St, Eastney, Southsea, Hants.
Bill James	G6KM	67, Osborne Rd, Farnborough, Hants.
Les Coote	G3AIB	6, Pitts Rd, Salthill, Slough, Bucks.
T.O.G. Tallboys	G2ATK	6, Bramley Croft, Shirley, Birmingham.
D.W.E. Wheele	G3AKJ	c/o Alder House, Teleg. Branch 1/3, Aldersgate St, EC1.
R.L. Royle	G2WJ	Haydens End, Gt. Canfield, Nr Dunmow, Essex.
W.E. Bartholomew	G8CK	28, Benskin Rd, Watford, Herts.
R. Palmer	G5P-P	22, Sherlock Rd, Coventry.
Eric Langton	G2HVK	349, Canterbury St, Gillingham, Kent.
L. Allen	G3MZ	57, Burnt Oak Lane, Sidcup, Kent.
Noel Bevan	G8IH	9, Hanger Lane, Ealing, W5.

Hendrik de Waard P~~A~~ZX Praediniussingel 39z, Groningen, Netherlands; I.F van Aggelen, P~~A~~XN, Judith Leijsterstraat 9, Haarlem, Holland; Lou Foreman P~~A~~VT, St Vitusholt 66, Winschoten, Netherlands; E.E. Erasmus ZS6GX 17 Third Ave, Lambton, Germiston, S.A; Gerry Miller VK5XT, 18 Ward St, S.Melbourne, SCS.D.E.G.Goodger ZL7RP 45 Russell St, Waipukurau N.Z; Bill Cheek VE3LB 102 Paradise Rd North, Hamilton. Ontario. (To be continued).

"WHAT THAT OTHER BLOKE IS DOING..."



Frame Hold

doing some 3 and 15 cm work. He also has a new QTH (see list). Don BRADFORD G3GB0 got caught... 4 ACR2Ms under his arm at rush hour! Nothing broken, but Don looks fb with his grey hair... He is building a telecine job, but leaving the RF side for a bit. Noel BEVA N G8IH has been working on a 2204 Mc/s TV link for a 'do' in Brighton, and hopes to apply the results to our 15 cm band. Grant DIXON points out that his 45 Mc/s osc is actually on 61.25 Mc/s. He is very anxious to borrow a 13 cm wavemeter. Can anyone help? Grant has had trouble with the 931A generating random large ampl. pulses for no apparent reason. Anyone else had the same trouble? He also wrote Scophony Baird... £90 for an Ike! He is sticking to his camera gun - cum - film strip projector - cum - telestill unit. D.W. White has a CV129 giving 75 mW at 10 kMc/s, and a 2K33 Klystron on 24,000 Mc/s, but is busy chasing bugs out of the Sync Sep in his Rx! Eric LANGTON G2HKK has laid in a store of the necessary bits and pieces, and is now looking for time to put them together. Maurice SWIFT has been starting at the bottom, and getting some experience on VHF with the aid of Bill Chaffe G2DLJ. G3EMJ is another in his area who is picture-conscious, and all three hope to get an Ike link in action. A. BARTHOLOMEW has been getting fair results with a VCR517 and 931A; he tried an ACR2 but had trouble with trapezium distortion, and is rebuilding with p-p deflection.

David P. Nolan writes in from Eire to say that they are forming a TV club there, and hope to do both closed circuit and RF transmission. David is trying 3 colour stereoscopic transmission, using rotating filters and plenty of polaroid. He also has a dx rx on Sutton Coldfield, and states that fair results have already been obtained near him (Co Wexford). Gerry Millerd VK3XT has been coping with a temperature of 106 degs in the shade, and sends his regards to any B'TC members who find the cold weather distressing.. He encloses a cutting from a Melbourne paper in which Barbara Ward says that TV is something a civilised country can well do without. Hmm. Graham Goodger ZL2RP has now returned to N.Z from Fiji. He has been unable to get hold of an AFQ9 radar jammer, but has a 931A and network, which is a help. He is now stuck for a suitable CRT for scanning. Graham adds that a radio mag out there is running a series of articles on TV construction; is this for AP or SC by moon reflection, cm?? Hendrik de WIARD PA0ZX has been on a tour of Scandinavia, and took the opportunity of looking in on various TV hams en route. (See separate details). He is hoping to come over with PA0VT this summer. Transmissions (on 2m) from the new location at Hogezaand are giving good results, and Philips have lent them a TV rx at last. 310 line scanning is being employed. Hendrik has been playing with flywheel sync circuits to good effect- circuits later.

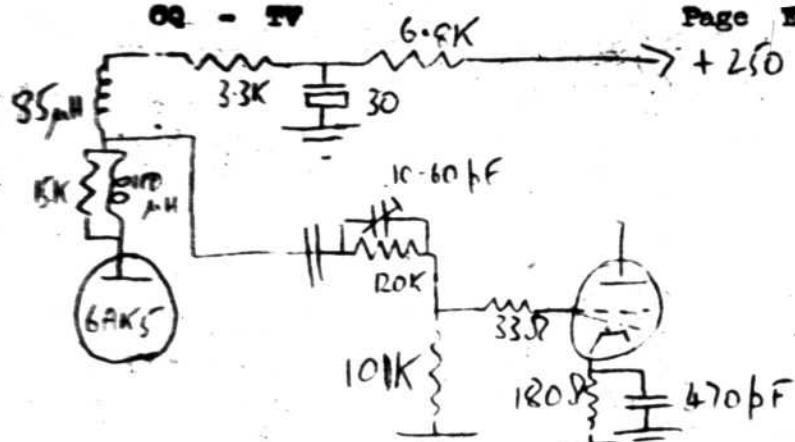
Newcomer G.G.SHORT, of High St, Swineshead, Boston, Lincs has a very fine rig; he has a telecine SOF projector running 400 lines 25 frames per sec. He also has a direct pickup camera using a disc and 3 931As (100 line), but a new 5527 rig with servo controlled lens turret and all the trappings - PLUS a BoT licence!

Fred ROSE has been rather shaken by the UHF freq allocations, but is getting down to it.

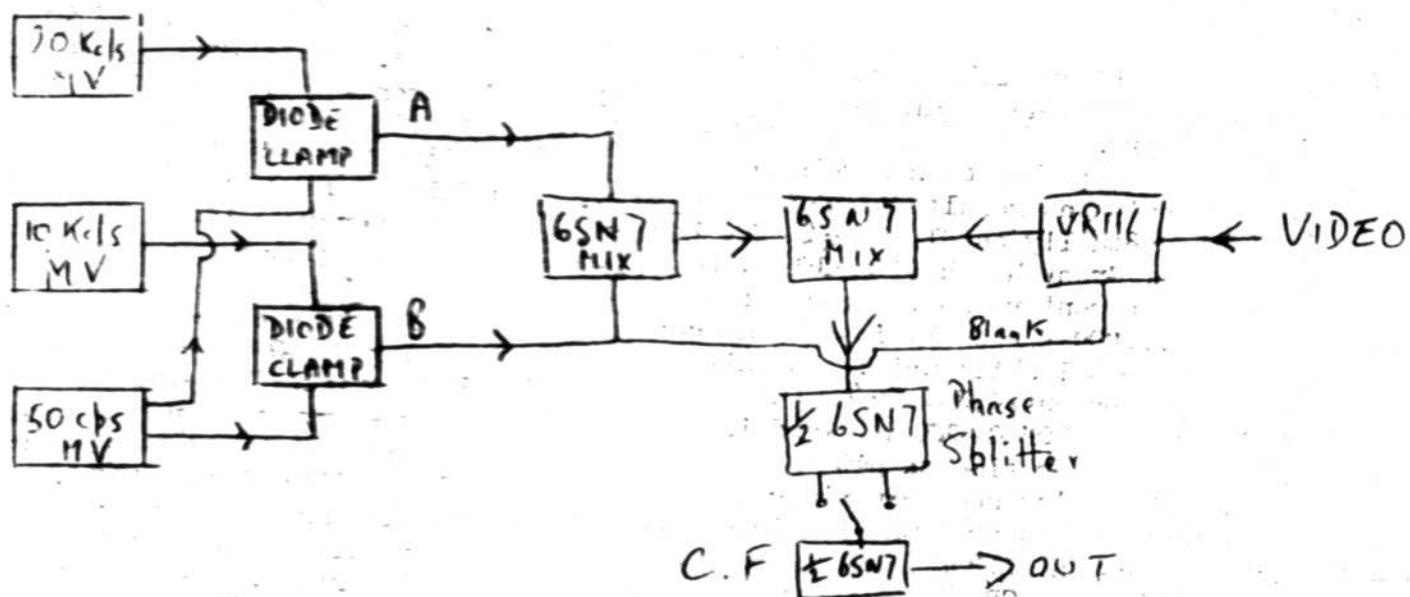
Pete PARKIN and Harold JONES G5ZT are combining their efforts... in five days of leave Pete built a 5527 camera amp, monitor, viewfinder and all the pulsing equipment.

Ian WILSON G3BHH is having BoT trouble, but still hopes to get an Ike. Jimmy HEDGES G3DBV has been released from the Marines, and is

GEBH gives the correct circuit for that High Peaker stage to counteract afterglow (right)



Grant Dixon gives the circuit of his latest pulser; at A there appears a burst of neg 20 kc/s pulses during the frame interval. At B a run of positive 10 kc/s pulses is interrupted for the frame pulse.



These are mixed in a twin triode, but care must be taken to balance the two inputs. Grant also adds a kink for Miller Frame TBs....a midget LPG in series with the anode load, with a 100K vari across it, will increase the amplitude considerably.

Fred Rose GEBHV sends in a nifty video-sync mixer culled from Electronic Eng; he has added DC restorers across the grids of V1 and V3. He says the output is about 20V p-p.

